WALK SIMULATING MACHINE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a walk simulating machine, particularly to one having the front end of its walking orbit designed to turn upward a little to enable a user to walk thereon steadily, able to eliminate the drawback of a conventional walking machine with an egg-shaped oval and water-drop-shaped walking orbit which is likely to force a user's body slant forward and slip or fall off the pedals owing to unstable posture caused by the improper center of gravity when the user makes exercise using the conventional walking simulating machine.

2. Description of the Prior Art

Generally, a conventional walking simulating machine has an egg-shape oval walking orbit fro the movement of the pedals with the front end portion of the orbit inclining down; therefore, when a user makes exercise of walking on pedals of the machine, his body will unsteadily slant forward. To prevent the body from slanting forward to avoid slipping and falling off the pedals, a user usually has the center of gravity of his body supported by the fingers of the feet, thus possible to result in sports injuries (such as a cramp

of the foot) and not conforming to ergonomics design.

SUMMARY OF THE INVENTION

The objective of the invention is to offer a walk simulating machine having the front end of its walking orbit of the pedals designed to turn upward a bit. Thus, when a user exercises walking with the feet stepping on the pedals, the heels of the user's feet may land first on the ground, that is, the center of gravity of his body will be completely supported by the heels of the feet, enabling a user to exercise walking thereon steadily and with the structure of the walk simulating machine conforming to ergonomics design.

A first feature of the invention is two vertical side connect rods having their lower ends respectively and pivotally connected with the front ends of two pedal connecting rods. Each vertical side connect rod consists of an upper and a lower connecting rod pivotally connected with each other. The upper connecting rods are fixedly positioned, while the lower connecting rods are able to sway back and forth together with the two pedal connecting rods. Thus, when the upper and the lower connecting rod are positioned in a straight line and in a non-straight line, the sway pivots of the front ends of the pedal connecting rods will be different and hence the front end of the walking orbit will turn upward a little, able to let a user's heels land on the ground first and keep

his body steady when the user exercises walking on the pedals of the machine.

A second feature of the invention is a slope adjuster able to drive the upper connecting rods and adjust them to a certain positional angle. Thus, when the upper connecting rods are driven to change their positional angles, the angles of the walking orbit will synchronously be changed, forming a simulated slopping-up or slopping-down or horizontal condition for a user to make exercise of walking.

BRIEF DESCRIPTION OF DRAWINGS

This invention will be better understood by referring to the accompanying drawings, wherein:

Fig. 1 is an upper view of the walking orbit formed by movement of the pedals of a conventional walking simulating machine:

Fig. 2 is a perspective view of a walk simulating machine in the present invention:

Fig. 3 is a side cross-sectional view of the walk simulating machine in the present invention:

Fig. 4 is a partial cross-sectional view of the walk simulating machine in the present invention:

Fig. 5 is a partial front upper view of the front portion of the walk simulating machine in the present invention.

Fig. 6 (A) is a side cross-sectional view of a slope adjuster adjusted to a horizontal condition in

the present invention:

Fig. 6 (B) is a side cross-sectional view of the slope adjuster adjusted to a slopping-up condition in the present invention:

Fig. 6 (C) is a side cross-sectional view of the slope adjuster adjusted to a slopping-down condition in the present invention:

Fig. 7 is a side cross-sectional view of a walking orbit adjusted to a horizontal condition in the present invention:

Fig. 8 is a side cross-sectional view of the walk simulating machine having its walking orbit adjusted to an slopping-up in the present invention:

Fig. 9 is a side cross-sectional view of the walking orbit adjusted to the slopping-up condition in the present invention:

Fig. 10 is a side cross-sectional view of the walk simulating machine having its walking route adjusted to a downward-slope condition in the present invention:

Fig. 11 is a side cross-sectional view of the walk simulating machine in case of the walking orbit adjusted to a slopping-down condition in the present invention:

Fig. 12 is a cross-sectional view of another preferred embodiment of position-limiting members of the upper connecting rods in the present invention:

and

Fig. 13 is an exploded perspective view of the position-limiting member of the upper connecting rod in the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of a walk simulating machine in the present invention, as shown in Figs. 2 and 3, includes a base 10, a crank unit 20, a front post 30, two pedal connecting rods 40, two vertical side connecting roods 50, two hand-control connecting rods 60, and a slope adjuster 70 as main components combined together.

The base 10 stands on the ground for supporting other components thereon.

The crank unit 20, as shown in Fig. 3, is fixedly assembled on the rear upper side of the base 10, having its opposite sides respectively and pivotally connected with a crank 21 and formed with an angular difference of 180 degrees between the two cranks 21.

The front post 30 is fixed with the front end of the bottom base 10, extending upward vertically and having the opposite sides of its upper end respectively provided with a horizontal rod 31 extending outward, as shown in Figs. 2 and 4. The horizontal rod 31 has their outer ends respectively and pivotally connected with a sliding base 32 having its outer end provided

with two rollers 33 having a gap 34 formed therebetween.

The two pedal connecting rods 40, as shown in Fig. 3, are respectively positioned at the opposite sides of the base 10, respectively having the rear end pivotally connected with the outer end of each crank 21 and the upper front portion secured with a pedal plate 41 to be treaded by a user.

The two vertical side connecting rods 50, as shown in Figs. 2 and 4, are respectively positioned at the two sides of the front post 30. Each side connecting rod 50 consists of an upper connecting rod 51 and a lower connecting rod 52 pivotally connected with each other. The upper connecting rods 51 have their upper ends pivotally connected with the horizontal rod 31, while the lower connecting rods 52 have their lower ends respectively and pivotally connected with the front ends of the two pedal connecting rods 40.

The two hand-control connecting rods 60, as shown in Figs. 2 and 3, are respectively positioned at the two sides of the front post 30, having the lower ends respectively and pivotally connected with the front ends of the two pedal connecting rods 40 and the upper ends respectively passing through the gap 34 between the two rollers 33 of the sliding base 32 and extending upward to be held by a user.

The slope adjuster 70, as shown in Figs. 2 and 4, is secured with the front post 30 and positioned under the horizontal rod 31. The slope adjuster 70 is provided with a slope adjusting rod 71 transversely inserted through the front post 30 and having two ends respectively extending outward and located at the opposite sides of the front post 30. The slope adjusting rod 71 has two ends respectively fixed with a crank 72 having the other end pivotally connected with an interacting block 73 bored with a vertical through hole 730 in the center, as shown in Fig. 4. Thus, the upper connecting rod 51 can be inserted through the through hole 730 of the interacting block 73 and has its upper end pivotally connected with the hang rod 31, while the lower connecting rod 52 has its lower end pivotally connected with the front end of the pedal connecting rod 40.

In addition, the slope adjuster 70 is provided with a positioning disk 74, an adjusting lever 75, a tenor 76 and a pressing rod 77.

The positioning disk 74 has one side secured with the front post 30 and the other side provided with an arc-shaped projecting rib 740 having plural positioning recesses 741 separately formed at the locations of preset angular difference, with the projecting rib 740 between every two positioning recesses 741 formed with an arc-shaped recessed

surface 742, as shown in Figs. 4 and 6 (A).

The adjusting lever 75 having its upper end vertically fixed with the slope adjusting rod 71 and the other end bent and extending to the front of the front post 30, able to drive the slope adjusting rod 71 to move together, as shown in Figs. 4 and 5.

The tenon 76 has one end transversely inserted through the adjusting lever 75, having its engage end 760 resting on the projecting rib 740 of the positioning disk 74 to be engaged and positioned in the positioning recesses 741. The tenon 76 is provided inside with a spring for forcing elastically the engage end 760 to always push against the projecting rib 740.

The pressing rod 77 has its intermediate portion pivotally connected with the adjusting lever 75, having one end inserted in a connecting portion between the adjusting lever 75 and the engage end 760 of the tenon 76. When the pressing rod 77 is pulled toward the adjusting lever 75, its other end will by leverage actuate the engage end 760 of the tenon 76 and compress the inner spring to disengage the engage end 760 from one of the positioning recesses 741 of the projecting rib 740, as indicated by the arrows in Fig. 5. Thus, the adjusting lever 75 can be pulled to actuate the slope adjusting rod 71 and the interacting blocks 73 to shift together and synchronously actuate the upper rods 51 to shift and change its positional

angle. Apart from being handled manually, the slope adjuster 70 can also be controlled by an electrically controlled device (such as a motor) to drive the slope adjusting rod 71 to shift and adjust its positional angles.

After the walk simulating machine is assembled, its walking orbit can be adjusted into three conditions for use.

1. The walking orbit is adjusted in a horizontal state when the upper connecting rods are controlled by the slope adjuster 70 to extend downward vertically, as shown in Figs. 3 and 6 (A). In this condition, when a user has its feet standing on the pedals plates 41 of the pedal connecting rods 40 and his hands holding the upper ends of the two hand-control connecting rods 60 and begins pedaling, there will form the same walking orbit as shown in Fig. 7. When the upper connecting rods 51 are kept motionless and the lower connecting rods 52 swing in alignment with the upper connecting rods 51, the swing pivot of the upper and the lower connecting rods 51, 52 is the horizontal rod 31. When the lower connecting rods 52 sway and deflect from the upper connecting rods 51, the sway pivot of the lower connecting rod 52 is the pivotal joint of the upper and the lower connecting rod 51 and 52.

2. The walking orbit is adjusted in an slopping-up condition when the adjusting lever 75 is

driven to actuate the interacting blocks 73 to make the lower connecting rods 52 shift backward and positioned at a certain angle, as shown in Figs. 8 and 6 (B). At this time, the walking orbit has its front end turning upward, as shown in Fig. 9, letting a user pedaling thereon feel as if he were training to walk on an upward slope.

3. The walking orbit is adjusted in a slopping-down condition when the adjusting lever 75 is driven to actuate the interacting blocks 73 to make the lower connecting rods 52 shift forward and positioned at a certain angle, as shown in Figs. 10 and 6 (C). At this time, the walking orbit has its front end slanting downward, as shown in Fig. 11, letting a user pedaling thereon feel as if he were training to walk on a downward slope.

In addition, a movable disk 78, as shown in Figs. 12 and 13, can take the place of the interacting block 73, as shown in Fig. 4, for controlling positional shift of the upper connecting rod 51 to. The movable disk 78 is provided vertically, having one side facing the crank 72 provided with a central shaft 780 protruding outward horizontally. The crank 72 has a shaft hole 720 bored in the center and facing the central shaft 780 of the movable disk 78 for receiving the central shaft 780 therein. The movable disk 78 has the other side provided with two position-limiting studs 781

protruding outward transversely to be respectively positioned at the front and the rear side of the upper connecting rod 51.

Since the upper connecting rods 51 are kept motionless when a user steps on the pedal plates 41 to walk, the sway pivot of the lower connecting rods 52 varies when the upper and the lower connecting rod 51, 52 are positioned in a straight line and in a non-straight line. Therefore, the walking orbit will have its front end turning upward a little. Thus, a user's heels can land the on the ground first when he stretches forward the feet for pedaling, able to keep the center of gravity of pedaling steady. Furthermore, when adjusted to a slopping-up or a slopping-down condition, the walking orbit still can keep its front end somewhat turning upward, conforming to ergonomics design and able to avoid sports injuries.

While the preferred embodiment of the invention has been described above, it will be recognized and understood that various modifications may be made therein and the appended claims are intended to cover all such modifications that may fall within the spirit and scope of the invention.